

PATENT SPECIFICATION

DRAWINGS ATTACHED

913,272



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COMPLETE SPECIFICATION

Improvements in and relating to Fastening Devices

We, UNITED-CARR FASTENER CORPORATION, a Corporation formed according to the laws of the State of Delaware, United States of America of 1014 Statler Office Building, Boston 16, Massachusetts, United States of America, do hereby declare the invention, for which we pray that a patent may be granted to us, and the method by which it is to be performed, to be particularly described in and by the following statement:—

This invention relates generally to fastening devices for mounting in an apertured support.

In automotive assemblies or the like, it is sometimes desirable in mounting structural panels to mount a bolt or a series of bolts firmly on one panel to facilitate aligning a second panel thereon prior to bolting them together. The present practice is to weld a bolt or a series of bolts to one panel prior to assembling the second panel with resultant misalignment and damage to screw threads plus injuries to personnel during other assembly line operations. Furthermore, existing devices used in lieu of the welding operation are not watertight, require a large application hole and a bolt carrying plate spanning the aperture where the head of the bolt is of lesser diameter than the aperture to permit installation.

The present invention provides a fastener assembly for mounting in an apertured support comprising a bolt, stud or the like having a head portion and a shank extending from the head portion and a retainer member pre-assembled with the bolt, stud or the like, the retainer member being formed of resilient material and comprising a base having an aperture through which the shank extends, a plurality of resilient fingers extending from the base towards the head portion in spaced relation thereto whereby the assembly can be assembled in an aperture in the support by inserting the shank and retainer member into the aperture so that the head portion or a washer assembled therewith abuts one face of the

support and the fingers, after snapping through the aperture abut the other face of the support to secure the assembly to the support.

One embodiment of the present invention will now be described, by way of example, with reference to the accompanying drawing in which:—

Fig. 1 is a plan view of a bolt retaining member;

Fig. 2 is a view in front elevation of the member shown in Fig. 1;

Fig. 3 is a plan view of a sealing washer;

Fig. 4 is a view in side elevation of the sealing washer;

Fig. 5 is a similar view of the bolt assembly;

Fig. 6 is a sectional view of the bolt assembly; and

Fig. 7 is a view taken on line 7—7, of Fig. 6.

Referring to the accompanying drawings, a fastener assembly 10 comprises a bolt, a sealing member 12 and a bolt retainer 14 for securing the bolt to a supporting panel 15 by being snapped into a square aperture 16.

The bolt comprises a head having a circular flange 17 and a square shoulder portion 18 from which extends a screw threaded shank 20. The sealing washer 12 may be of any suitable resilient material and a synthetic resinous material of the polyvinyl type is suitable. The washer may be of any desired shape but as illustrated in Fig. 3, the preferred shape is circular having an external diameter substantially the same as the diameter of the flange 17. A central aperture 24 of a diameter greater than the shoulder portion 18 of the bolt is formed to allow the washer 12 to be positioned therein.

The bolt retainer 14 is formed from resilient sheet metal and comprises a substantially square base portion 26 with a central aperture 28 therein. A plurality of tongues 30 are bent upward from the periphery 32 of the base portion 26 at substantially right angles thereto conforming generally to the

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5 shape of the square shouldered portion 18 of
the bolt, and of sufficient length so as to pene-
trate into the aperture 16 of the supporting
panel 15 for a purpose to be described herein-
after. The tongues 30 are positioned adjacent
each corner of the base portion 26 and prevent
relative rotation between the retainer 14 and
the bolt. A series of fingers 34 and of lesser
overall length than the tongues 30 extend in
10 the same general direction as the tongues 30
and are disposed between the tongues and in-
clined laterally outwardly from the central
aperture 28.

15 The assembly 10 is preassembled prior to
installation in the panel by positioning the
washer 12 on the under surface of the flange
17 and placing the retainer 14 on the
shouldered portion 18 and securing it firmly.

20 The assembly is then inserted into the aper-
ture 16 of the panel 15 by an axial push so
that the fingers 34 flex inwardly in the direc-
tion of the bolt axis to allow passage through
the panel and then flex outwardly to co-
operate with the undersurface of the panel 15
25 to retain the bolt in assembly. After the assem-
bly has been snapped into the panel, it will
readily be seen from Fig. 7 that the tongues
30 will be positioned adjacent the corners 36
of the aperture 16 so as to allow a minimum
30 amount of rotatable movement of the bolt
when torque is applied.

WHAT WE CLAIM IS:—

35 1. A fastener assembly for mounting in an
apertured support comprising a bolt, stud or
the like having a head portion and a shank
extending from the head portion and a re-
tainer member pre-assembled with the bolt,

stud or the like, the retainer member being
formed of resilient material and comprising
a base having an aperture through which the
shank extends, a plurality of resilient fingers
40 extending from the base towards the head por-
tion in spaced relation thereto whereby the
assembly can be assembled in an aperture in
the support by inserting the shank and re-
tainer member into the aperture so that the
head portion or a washer assembled therewith
abuts one face of the support and the fingers,
after snapping through the aperture abut the
other face of the support to secure the assem-
bly to the support. 50

2. A fastening assembly according to Claim
1 wherein the base of the retainer member has
a plurality of tongues extending towards the
head portion and surrounding a non-circular
55 part of the head portion to prevent relative
rotation of the bolt, stud or the like and the
retainer member.

3. A fastening assembly according to Claim
2 wherein each finger on the base portion has
60 a tongue on each side thereof.

4. A fastening assembly according to either
one of Claims 2 and 3 wherein the base portion
has a substantially rectangular shape and ton-
gues are positioned adjacent each corner of
65 the rectangular shape.

5. A fastening assembly for mounting in an
apertured support substantially as described
with reference to and as illustrated in the
accompanying drawing. 70

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COMPLETE SPECIFICATION

1 SHEET

This drawing is a reproduction of
the Original on a reduced scale

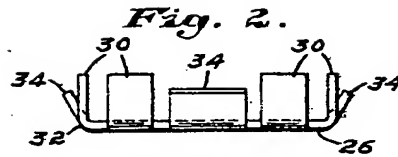
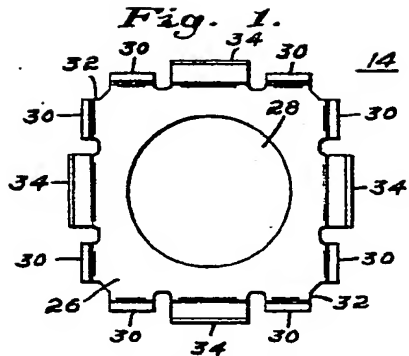


Fig. 3.

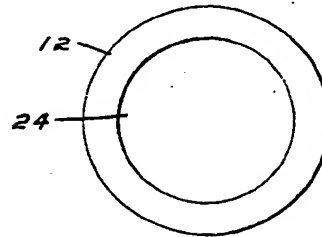
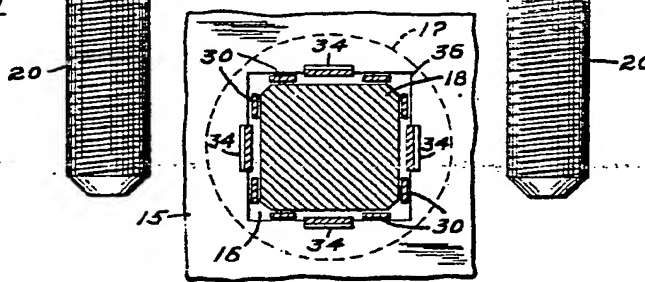
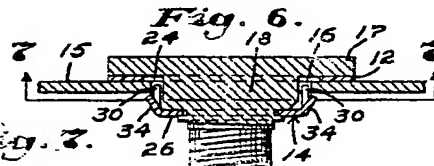
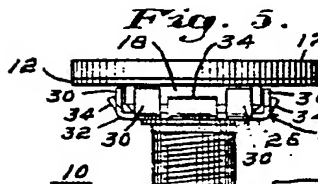


Fig. 4.



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